

What Is Claimed Is:

1. An image processing apparatus comprising:

a reference value determining part that determines a reference value with respect to a target element in an image based upon a color attribute of the target element;

a judging condition setting part that sets a judging condition based upon the reference value; and

a monochrome/color judging part that judges that the target element is monochrome if the color attribute of the target element meets the judging condition and that the target element is colored if the color attribute of the target element does not meet the judging condition.

2. An image processing apparatus according to Claim 1, further comprising:

a selecting part that selects monochrome image processing or color image processing for every predetermined unit according to the judging result of the monochrome/color judging part.

3. An image processing apparatus according to Claim 2, wherein the selecting part selects the monochrome image processing when all the target elements included in the predetermined unit are judged to be monochrome and selects the color image processing when any one of the target elements included in the predetermined unit is judged to be colored.

4. An image processing apparatus according to Claim 3, wherein the predetermined unit corresponds to a page unit or a job unit.

5. An image processing apparatus according to Claim 1, wherein all pixels in the image are rendered to be the target elements, respectively.

6. An image processing apparatus according to Claim 1, wherein part of pixels in the image are rendered to be the target elements, respectively.

7. An image processing apparatus according to Claim 1, wherein all pixel groups in the image are rendered to be the target elements, respectively.

8. An image processing apparatus according to Claim 1, wherein part of pixel groups in the image are rendered to be the target elements, respectively.

9. An image processing apparatus comprising:

a reference value determining part that determines a reference value with respect to a target element in an image based upon plural color component values possessed by the target element;

a judging range setting part that sets a judging range based upon the reference value; and

a monochrome/color judging part that judges that the target element is monochrome if the plural color component values possessed by the target element are present within the judging range and that the target element is colored if any one of the plural color component values possessed by the target element is outside the judging range.

10. An image processing apparatus according to Claim 9, wherein the reference value is an average value of the plural color component values possessed by the target element.

11. An image processing apparatus according to Claim 9, wherein the reference value is a weighed average value of the plural color component values possessed by the target element.

12. An image processing apparatus according to Claim 9, wherein the width of the judging range is variably set in response to the reference value.

13. An image processing apparatus according to Claim 12, wherein, when the greater the reference value is, the smaller the width of the judging range is set while the smaller the reference value is, the greater the width of the judging range is set.

14. An image processing apparatus according to Claim 9, wherein the judging range is individually set for every color component, and the monochrome/color judgement is executed for every color component.

15. An image processing apparatus according to Claim 9, further comprising:

a part that enables a user to variably set at least one of a determining condition of the reference value and a setting condition of the judging range.

16. An image processing apparatus comprising:

a first judging part that judges whether a target element in an image is monochrome or not;

a second judging part that judges whether plural neighboring elements in the vicinity of the target element are monochrome or not when the first judging part judges that the target element is not monochrome; and

a third judging part that judges whether the target element is monochrome or color from a comparison of brightness of the target element with brightness of the plural neighboring elements when all the neighboring elements are judged to be monochrome by the second judging part,

wherein the target element is finally judged to be monochrome if the first judging part judges that the target element is monochrome and the third judging part judges that the target element is monochrome, and the target element is finally judged to be colored if the second judging part judges that not all the neighboring elements are monochrome and if the third judging part judges that the target element is colored.

17. An image processing apparatus according to Claim 16, wherein the first judging part comprises:

a first reference value determining part that determines a first reference value based upon a color attribute of the target element;

a first judging condition setting part that sets a first judging condition based upon the first reference value; and

a first monochrome/color judging part that judges that the target element is monochrome when the color attribute of the target element meets the first judging condition and judges that the target element is colored when

the color attribute of the target element does not meet the first judging condition, and

the second judging part comprises:

a second reference value determining part that determines a second reference value based upon a color attribute of the neighboring element;

a second judging condition setting part that sets a second judging condition based upon the second reference value; and

a second monochrome/color judging part that judges that the target element is monochrome when the color attribute of the target element meets the second judging condition and judges that the target element is colored when the color attribute of the target element does not meet the second judging condition.

18. An image processing apparatus comprising:

a monochrome/color judging part that judges whether image data is color data or monochrome data based upon a predetermined judging criterion; and

a judging criterion variably setting part that variably sets the predetermined judging criterion in the monochrome/color judging part.

19. An image processing apparatus according to Claim 18, wherein the judging criterion variably setting part adaptively sets the predetermined judging criterion based upon the image data itself.

20. An image processing method comprising the steps of:

determining a reference value with respect to a target element in an image based upon a color attribute of the target element;

setting a judging condition based upon the reference value; and
judging whether the target element is monochrome or colored from
the color attribute of the target element based upon the judging condition.

21. A recording medium readable by a computer, the medium
storing an image processing program that causes the computer to execute
instructions comprising the functions for:

determining a reference value with respect to a target element in an
image based upon a color attribute of the target element;

setting a judging condition based upon the reference value; and

judging that the target element is monochrome if the color attribute
of the target element meets the judging condition and that the target element
is colored if the color attribute of the target element does not meet the
judging condition.